

Trend of Human Immunodeficiency Virus in Okene

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In a cross-sectional study undertaken to determine the relative spread of human immunodeficiency virus type I and II (HIV-1 and HIV-2) among pregnant women resident in Okene, Kogi state, Nigeria, it was discovered that HIV-1 is more prevalent: 2.83% for HIV-1 and none for HIV-2. The study population was randomly drawn from women attending antenatal clinics in Okene General Hospital. Blood specimens and personal data were obtained from one hundred and six women attending the clinics. The implication of this is that, at this prevalence of 2.83% between 89 to above 267 HIV positive infants are born in Okene per annum. The distribution across age showed that HIV-1 spread is higher among the age group 20-29 years olds. This study has for the very first time, showed that HIV exist in Okene, and is the second time (over a time period of eleven years) that any study on HIV will ever be carried out in Okene. It thus provides a base line for further studies (including surveillance and interventions) on HIV spread in Okene.

Keywords: AIDS, antenatal, pregnancy, seroprevalence, women.

Human immunodeficiency virus (HIV) the etiologic agent of acquired immunodeficiency virus (AIDS) is acquired by direct exposure of a person's blood stream to body fluids containing the virus through sexual contact, transfusion of infectious blood or blood products, perinatally from an infected mother to fetus, from mother to child through breast-feeding and sharing of objects like blades, clippers etc. that come in contact with body fluid. Once inside the body, the virus possibly first infects the dendritic cells and then spreads to

the T-helper cells, macrophages, monocytes and other dendritic cells; all these cells possess the CD4 glycoprotein plasma membrane receptors on their membrane. The precise mechanism of AIDS pathogenesis is still unknown and many hypotheses exist¹⁻³.

Sub-Saharan Africa has just over 10% of the world's population, but is home to more than 60% of all people living with HIV-25.8 million. In 2005, an estimated 3.2 million people in the region became newly infected, while 2.4 million adults and children died of AIDS. AIDS is wasting and more prevalent among ages 20-29 years which is the most productive age group, leading to decrease in labour work force worldwide⁴⁻¹⁰. Nigeria has the biggest population in Africa with 1 in 6 Africans being Nigerian. Although HIV prevalence rates are much lower in Nigeria (4.4%) than in other African

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countries such as South Africa and Zambia, the size of Nigeria's population meant that by the end of 2005, there were an estimated 2,900,000 people living with HIV/AIDS. This is the largest number in the world after South Africa and India. HIV/AIDS has already badly affected Nigeria society and its economy¹¹. Although much has been done by the Government and non-governmental organizations to educate and prevent the spread nation wide, the spread of HIV is still on, with highest rates in Sub-Saharan Africa^{10, 12-13}. At the end of 2006, around 550,000 people were estimated to require antiretroviral therapy, of whom 81,000 (15%) were receiving the drugs. Although this is twice as many as were on treatment at the end of 2005, Nigeria's coverage rate is still only half of the average for sub-Saharan Africa¹¹.

Okene is a town in Kogi State, Nigeria. It is the home of the Ebira people of central Nigeria. The local language is Ebira. The 1991 census of Nigeria lists a population of 312,775 people living in Okene, 2007 estimates place it as high as 498,877.¹⁴ The first and only time before this study, that data was ever generated on HIV in Okene was in 1995 (National HIV surveillance among pregnant women), in which Okene had a prevalence of 0%. This research was therefore designed with the aim of understanding the trend of Human Immunodeficiency Virus (HIV) among pregnant women in Okene, Nigeria.

MATERIAL AND METHODS

Area of study

This study was conducted; using blood specimens collected randomly from pregnant women attending antenatal clinics in General Hospital Okene, Okene local government area of Kogi state. Okene is one of the largest towns in Kogi state. The General Hospital is the only government Hospital and major health care provider for the people of Okene. The languages spoken in Okene are Ebira and English.

Data collection

Sample size

One hundred and six specimens were randomly collected by selecting the first two out of every three patients attending antenatal clinics in the study hospital (who consented), in February 2006.

Study design and date

This work is a descriptive cross-sectional survey, and was carried out in February 2006.

Questionnaire administration

Each woman was interviewed to collect data about their marital status, family type, residence, age, number of wives in the family, occupation, spouse occupation, number of previous pregnancies, number of abortions/miscarriages, socio-economic status (SES), state of origin and local government area (L.G.A.). The questionnaire was administered after receiving informed consent (a sample of the questionnaire is shown in appendix 1). The interview was conducted by the authors in English language and in Ebira Language (for those who can not communicate in English).

Collection of specimens

Three millilitre of blood was drawn from each woman by venepuncture. Serum was subsequently separated from each blood sample and stored frozen (-20°C) until tested for presence of antibodies against HIV.

HIV assay

Assay for anti-HIV antibodies was carried out on each specimen using an enzyme immunoassay (EIA) kit (Trinity Biotech SeroCard™ HIV, manufactured by TRINITY BIOTECH USA). Confirmatory test was carried out on the HIV-positive sera using another EIA kit (ImmunoComb II HIV 1 & 2 Bispot manufactured, by ORGENICS, Israel). The assay was carried out according to manufacturers' instructions. This technique meets the requirement for HIV testing according to the National Guidelines on Prevention of Mother-to-Child Transmission of HIV in Nigeria 2005⁹.

Data analysis

Data collected from the HIV assay and questionnaire administration (on age group) is outlined in table 1. Because of the low prevalence of HIV, association of demographic characteristics of subjects with HIV status could not be determined.

Ethical consideration

Letters of introduction were sent to the Chief medical officers by the head of the Department of Microbiology, Faculty of Science Ahmadu Bello University, Zaria, and in return ethical clearance was obtained from the Chief

medical officers of the hospitals used for the study. The Chief medical officers informed the antenatal unit heads on the research interest, and the antenatal unit heads educated the antenatal clinic attendees on what the research was all about. Then blood specimens and data were collected from the randomly selected antenatal clinic attendees whose consent was sought. But there was no HIV-status disclosure to the subjects.

RESULTS

The result of the initial screening carried out on the serum samples with Trinity Biotech

SeroCard™ HIV showed that 3 (2.83%) of the 106 pregnant women tested had antibodies against HIV1/2. Thus the seroprevalence rate for HIV among the pregnant women was 2.83%. The result of confirmatory and type specifying test carried out on the 3 HIV-positive sera using ImmunoComb II HIV 1 & 2 Bispot, showed that 3 (100%) out of the three specimens had antibodies against HIV-1 only. Thus the seroprevalence rate for HIV-1 among the pregnant women was 2.83% and 0% for HIV-2.

Table 1 shows the distribution of HIV infection across age, in which the only age groups affected were 20-24 and 25-29 year-olds.

Table 1. Distribution of HIV-1 across Age Groups

Age Groups in Years	Number Tested	Number Seropositive (% Seropositive)
<15	1	0(0%)
15-19	6	0(0%)
20-24	30	2(6.67%)
25-29	35	1(2.86%)
30-34	17	0(0%)
35-39	16	0(0%)
40-44	0	0(0%)
45-49	10	(0%)
Total	106	3(2.83%)

DISCUSSION

The result of the initial screening test showed a prevalence of 2.83%, which indicates that HIV is present in Okene. Although a prevalence rate of 2.83% appears low, it is significant for a condition as important as living with HIV. Though this study is in contrasts with study by Sagay *et al.* among pregnant women in Jos, Nigeria, which showed a prevalence of 8.2%,¹⁵ it however agrees with the observation by the 2004 Report on the global AIDS epidemic and the National Guidelines on Prevention of Mother-to-Child Transmission of HIV in Nigeria, 2005, that the prevalence of HIV vary from one part of Nigeria to another with state prevalence of as low as 1.2% in Osun state and as high as 12% in Cross

River state, at a national prevalence of 5%^{9,16}. This study’s prevalence falls into the range of prevalence recorded by other studies but among different study populations: 1.0% prevalence among blood donors in Port Harcourt,⁷ 3.1 % prevalence among unemployed people in Port Harcourt,¹⁷ and 8.2 % among couples attending fertility clinic in Sagamu¹⁰.

The fact that all the positive specimens where type I, shows the active spread of type one above type II in Okene, and this is not surprising. Similar studies in Nigeria and Sub Saharan Africa have shown similar trend; in most case the prevalence of HIV-1 is four or more times higher than that of HIV-2^{7, 18}. Unpublished data from the Sick bay clinic of Ahmadu Bello University, Samaru Campus, Zaria also revealed the low

prevalence of type II in comparison to type I. Type I is more aggressive, thus the infected population infected will suffer more than if infected with type II. Chronic parasitic infections like malaria, cryptosporidial diarrhoea, ascariasis, etc. and chronic diseases of other aetiologies like tuberculosis, typhoid, Herpes infections, etc. are endemic in Sub Saharan Africa as a whole. Thus because of the dual effect of HIV-1's aggressiveness and the chronic infections/diseases endemic in Sub Saharan Africa, the HIV-1 infected population easily succumb to AIDS, unlike their counterparts in the western world. This is evident in the multiplication of hitherto malignant situations like Kaposi's sarcoma, premalignant and malignant conditions of the cervix, and AIDS-related dementia associated with HIV-1 that are now rampant in Nigeria especially among HIV-1 positive individuals.¹⁹⁻²⁴ That HIV type I is the most actively spreading strain in Okene, makes it even more necessary for containment of the spread.

The distribution of HIV across age showed that the only groups that were HIV positive, were 20-24 and 25-29 years' olds, with the highest frequency among age 20-24 years' olds. This agrees with Sagay *et al* study on HIV infection among pregnant women in Nigeria,¹⁵ and studies on HIV seroprevalence among other study populations, which had their highest frequency among age 20-29 years' olds.^{7-8,15} The probable reason for this is that, people in these age groups (20-24 and 25-29 years' old) are more sexually active (bearing in mind that 80% of HIV infections in Nigeria are transmitted by heterosexual sex¹¹) than in the other age groups and can easily have multiple sexual partners, because at that age they are much more independent, with less parental control unlike the younger ones, and more carefree than the older ones; and thus more at risk of contracting HIV.

At the estimated birth rate of 42/1000 per annum⁹ and a population of 498,877;¹⁴ 20.953 births are expected per annum in Okene. At a prevalence of 2.83% about 593 children will be born by HIV infected women. In the absence of intervention, between 15 and 45% of infants born to HIV positive mothers acquire the infection during pregnancy, delivery or through breast-feeding⁹. Thus in the absence of intervention, between 89 and >267 HIV positive children per

annum will be born in Okene. In 1995 the seroprevalence of HIV among pregnant women in Okene was 0%, thus by this study's observation there was an increase of 2.83% over a period of 11 years (1995-2006)¹⁶. At present, the prevalence has great implication on the unborn children, but if the prevalence should continue to increase either arithmetically or geometrically the future is bleak for both the living and the unborn.

CONCLUSION

This study has shown for the first time that HIV exists in Okene. This study have also shown that containment is necessary, if a great epidemic is to be prevented, considering the economic destabilizing and fast spreading nature of HIV in the developing world.

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Appendix 1.

A Sample of the Questionnaires used for Data Collection

QUESTIONNAIRE

This questionnaire is prepared in order to collect data on the prevalence of Human immunodeficiency virus (HIV) among pregnant women in Okene. The information obtained will be handled properly and confidentially for contribution to knowledge. Patients' identity shall be kept confidential. Please fill in the gaps and/or tick appropriately.

Project number: _____

Age: Below 15yrs (specify age) []; 15-19yrs []; 20-24yrs[]; 25-29yrs[];
30-34yrs[]; 35-39yrs[]; 40-44yrs[]; 45-45yrs[]; above 45yrs
(specify age)[]

Marital status: single []; married [];

If married: monogamous family []; polygamous family []

If polygamous, how many wives: _____

Residence: Rural []; Urban []

Occupation: _____

Spouse occupation: _____

Number of pregnancies before the present pregnancy: 0 []; 1 []; 2 []; 3[];4[];
above 4 (specify how many) []

Number of abortions/miscariages before the present pregnancy: 0 []; 1 []; 2 [];
3[];4[];
above 4 (specify how many) []

Number of living children before the present pregnancy: 0 []; 1 []; 2 []; 3[];4[];
above 4 (specify how many) []

Presence or history of STI/opportunistic infections: _____

*Socioeconomic status: Low []; Average []; High []

State of origin: _____ L. G. A.: _____

{* Socioeconomic status is in terms of family income per month:

Low earns < N10, 000; Average earns N10, 000 - N20, 000; High earns > N20, 000}